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(71) Applicant (for all designated States except US): **KONINKLIJKE PHILIPS ELECTRONICS N.V.** [NL/NL];
Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **HENDRIKS, Bernardus, H., W.** [NL/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). **VAN AS, Marco, A., J.** [NL/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). **VAN GAAL, Fransiscus, M., A., M.** [NL/NL]; c/o

Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). **VAN DER VLEUTEN, Cornelius, A., N., M.** [NL/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

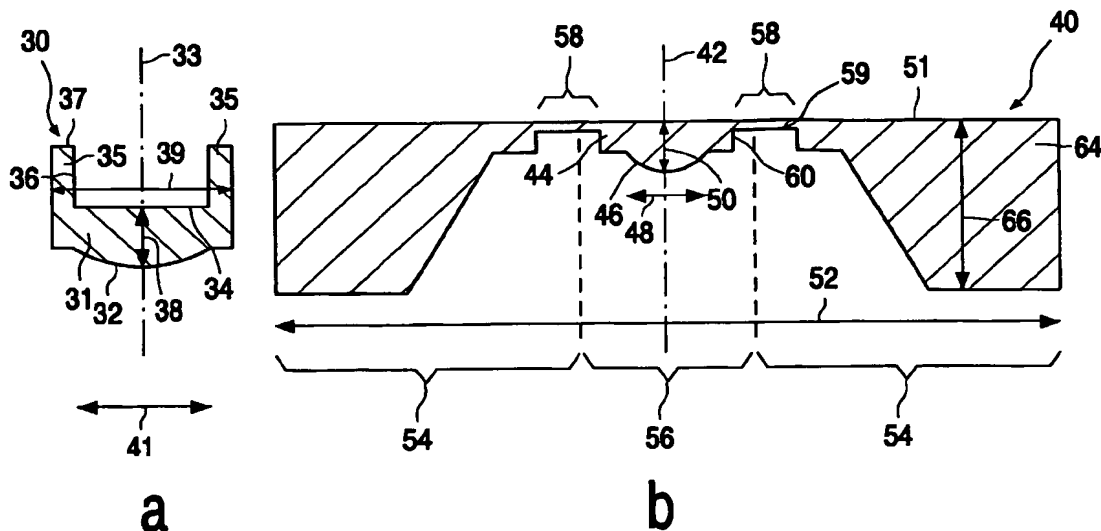
(74) Agent: **VISSER, Derk;** Philips Intellectual Property & Standards, Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).

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[Continued on next page]

(54) Title: OPTICAL LENS ASSEMBLY



(57) Abstract: An optical lens set to form a lens comprising a first lens set element (30) including a lens (31) having a curved lens surface (32) having an entrance pupil with a first diameter (41), wherein the first lens set element is of a first width (39) taken along a direction perpendicular to the optical axis; and a second lens set element (40) including a lens (44) having a curved lens surface (46) having an entrance pupil with a different, second diameter (48) which is smaller than the first diameter. The second lens set element has an inner part (56) and an outer part (54; 154), the inner part including the second lens (44). The outer part (54) extends to a second width (52) which is greater than the width of the first lens set element, in order to improve handling and stress propagation characteristics for the smaller, second lens (44).

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A. CLASSIFICATION OF SUBJECT MATTER

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Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 02/086876 A (KONINKL PHILIPS ELECTRONICS NV) 31 October 2002 (2002-10-31) the whole document	1-5,8-11
X	US 5 612 826 A (OHSHITA KOICHI) 18 March 1997 (1997-03-18) column 3, line 19 - line 36; figure 1	1-5,9,11
X	US 6 449 221 B1 (JAIN AMIT ET AL) 10 September 2002 (2002-09-10) column 14, line 41 - line 49; figure 10	1,10,11

☐ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

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Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
 Fax: (+31-70) 340-3016

Authorized officer

Holubov, C

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 02086876	A	31-10-2002	CN 1465051 T	31-12-2003
			EP 1386316 A1	04-02-2004
			WO 02086876 A1	31-10-2002
			US 2002181127 A1	05-12-2002
US 5612826	A	18-03-1997	JP 8036124 A	06-02-1996
US 6449221	B1	10-09-2002	US 6243350 B1	05-06-2001
			US 6270696 B1	07-08-2001
			US 5936928 A	10-08-1999
			US 5793584 A	11-08-1998
			US 5828482 A	27-10-1998
			US 2003035361 A1	20-02-2003
			AU 7362898 A	24-11-1998
			DE 69811880 D1	10-04-2003
			DE 69811880 T2	27-11-2003
			EP 0979509 A1	16-02-2000
			US 6490242 B1	03-12-2002
			WO 9849684 A1	05-11-1998
			ID 16848 A	13-11-1997
			TW 409248 B	21-10-2000
			US 6055222 A	25-04-2000
			US 5881042 A	09-03-1999
			US 2002011298 A1	31-01-2002
			AU 3824297 A	25-02-1998
			EP 0916133 A1	19-05-1999
			ID 17977 A	12-02-1998
			JP 2000517090 T	19-12-2000
			TW 381254 B	01-02-2000
			WO 9806095 A1	12-02-1998
			US 6061322 A	09-05-2000